PATENT CLAIMS

1. A transmission component for producing normal and anormal chromatic dispersion which can be predetermined, having

- a glass fiber optical waveguide in which it is possible to carry not only the LP_{01} fundamental mode but also at least one LP_{mn} mode, and
- two pairs of Bragg gratings (gratings 1 and 2, as well as 3 and 4), of which at least one pair has chirped Bragg gratings,

in which the first Bragg grating in each pair reflects the arriving light beam back to the other Bragg grating in a direction approximately opposite the incidence direction, and from which other Bragg grating the light beam emerges in, or at least parallel to, the original incidence direction.

2. The transmission component as claimed in claim 1, characterized in that the Bragg gratings are contradirectionally mode-coupling fiber Bragg gratings, which are produced in particular in the glass fiber optical waveguide.

3. The transmission component as claimed in claim 1 or 2,
characterized in that all the Bragg gratings are chirped.

4. The transmission component as claimed in one of claims 1 to 3,
characterized in that the two gratings in each pair have different grating constant ranges and opposite chirp.

5. The transmission component as claimed in one of claims 1 to 4,
characterized in that, in the wavelength band that is to be used, the second grating (2) in the first pair first of all mode-couples the LP_{01} fundamental (mode I), which is fed in on the input side, contradirectionally into an intermediate mode (mode II),
in that the first grating (1) mode-couples the intermediate mode contradirectionally, that is to say in the forward direction once again, into a third mode (mode III),
in that the fourth grating (4) mode-couples the third mode contradirectionally into the intermediate mode (mode II) once again, and
in that the third grating (3) mode-couples the intermediate mode contradirectionally, that is to say once again in the forward direction, into the LP_{01} fundamental (mode I) which, after passing through the fourth grating (4), emerges on the output side with dispersion applied to it by virtue of the chirp of the gratings (1 to 4).

6. The transmission component as claimed in one of claims 1 to 5,
characterized in that a parabolic refractive index profile is provided in the core of the glass fiber, in order to produce the Bragg gratings.

7. The transmission component as claimed in claim 6, characterized in that the glass fiber is doped with GeO_2, F- and/or B_2O_3 in order to produce the refractive index profile.

8. The transmission component as claimed in one of claims 1 to 7,
characterized in that the glass fibers have approximately the same mode field radius as the fibers that are to be connected.

9. The transmission component as claimed in one of claims 1 to 8,
characterized in that LP_{01}, LP_{02} and LP_{03} are used as the rotationally symmetrical modes that are carried.

10. The transmission component as claimed in one of claims 1 to 9,
characterized in that non-rotationally symmetrically carried modes, namely the LP_{11} mode, are also used, with the Bragg gratings not being produced at right angles, but obliquely with respect to the fiber axis in the glass fiber.

11. The transmission component as claimed in one of claims 1 to 10,
characterized in that a cladding mode is also used in addition to two modes which are carried.

12. The transmission component as claimed in one of claims 1 to 11,
characterized in that the gratings (1 to 4) are chirped linearly for first-order dispersion compensation, or are chirped non-linearly for higher-order dispersion compensation of one or more of the gratings (1 to 4).

13. The transmission component as claimed in one of claims 1 to 12,

characterized in that, in order to precisely set the propagation time difference between the extreme values for the wavelengths that are used, defined mechanical forces are applied to the fiber, and/or the temperature of the fiber is thermally stabilized at a suitable value within a specific temperature range.

14. A transmission component having increased chromatic dispersion,
characterized in that a number of the elements as claimed in one of claims 1 to 13 are connected in series.

15. Use of a transmission component as claimed in one of claims 1 to 14 in order to compensate for the dispersion in glass fiber paths.